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TITLE: Tolerating link faults in D-dimensional mesh - using wild-card dimensions and error correcting codes e.g. extended Reed-Solomon codes theory

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BASIC-ABSTRACT:

Using techniques from error correcting codes specifically a Maximum Distance Separable (MDS) code e.g. the extended Reed-Solomon codes and an extension of the Vandermonde matrix, a d-dimensional fault-tolerant mesh is constructed which has degree  $2s$  and can tolerate  $2s-2d+1$  edge faults, for any  $d$  less than  $s$  less than  $n+1$ , regardless of the faults distribution.

The faults are tolerated in the sense that the remaining fault free network still guaranteed to contain a d-dimensional mesh of the same size as a subgraph.

ADVANTAGE - Programs designed for original mesh can be run on fault tolerant mesh without slowdown, even after up to  $2s-2d+1$  link failures

CHOSEN-DRAWING: Dwg.0/0

TITLE-TERMS: TOLERATE LINK FAULT DIMENSION MESH WILD CARD  
DIMENSION ERROR CORRECT CODE EXTEND REED CODE THEORY

ADDL-INDEXING-TERMS: HYPERCUBE

DERWENT-CLASS: W01

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